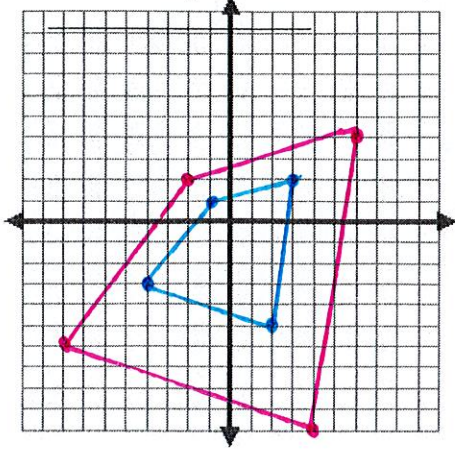


**Honors Geometry**  
**Unit 2A Test Review – Dilations and Similarity**

Key!

1. Draw a dilation of quadrilateral ABCD with the given vertices.  
Use the **origin as the center** and use a scale factor of  $\frac{1}{2}$ .

How does the perimeter of the pre-image compare to the perimeter of the image?



Pre-image	Image
A (-2, 2)	<u>(-1, 1)</u>
B (-8, -6)	<u>(-4, -3)</u>
C (4, -10)	<u>(2, -5)</u>
D (6, 4)	<u>(3, 2)</u>

Reduction or Enlargement? (Circle One)

#2-3: Determine the scale factor for each dilation. Assume the **center is the origin**. Is the dilation a reduction or an enlargement?

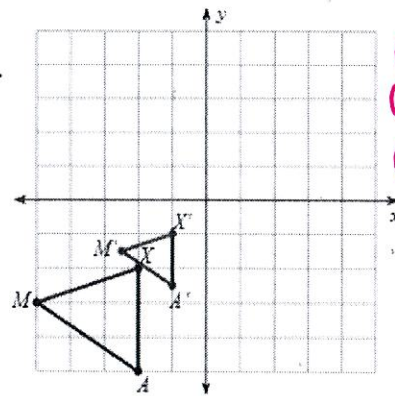
2. U(2, 3), C(3, 4), X(5, 1)

to

U'(8, 12), C'(12, 16), X'(20, 4)

k = 4 reduction or enlargement

- 3.



$(-2, -2) \rightarrow (-1, -1)$   
 $(-5, -3) \rightarrow (-2.5, -1.5)$   
 $(-2, -5) \rightarrow (-1, -2.5)$

k =  $\frac{1}{2}$  or 0.5 reduction or enlargement

4. Given that  $\triangle MAX \sim \triangle ZY$ . Complete the following:

a.  $\angle M \cong$   $\angle Z$

b.  $\frac{AX}{ZY} = \frac{XM}{$   $ZY$

c.  $\angle Z \cong$   $\angle M$

d.  $\triangle ZY \cong$   $\triangle MAX$

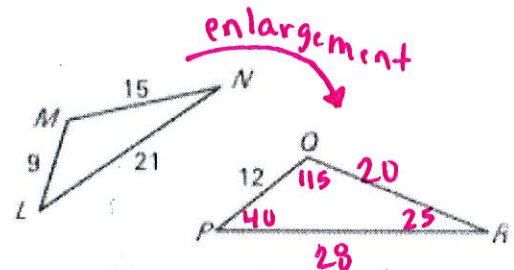
5. Given  $\triangle LMN \sim \triangle PQR$  Complete the following:

a. Scale factor of  $\triangle LMN$  to  $\triangle PQR$   $\frac{4}{3}$

b.  $QR =$  20 and  $PR =$  28.  $\frac{9}{12} = \frac{21}{x}$   $9x = 252$   $x = 28$

c. What is the ratio of the perimeters?  $45:60 = 3:4$

d. If  $m\angle P = 40^\circ$  and  $m\angle Q = 115^\circ$ , then  $m\angle R =$   $25^\circ$ ,  $m\angle L =$   $40^\circ$ , and  $m\angle M =$   $115^\circ$



6. If two polygons are similar, the ratio of their areas is equal to the Square of the scale factor.

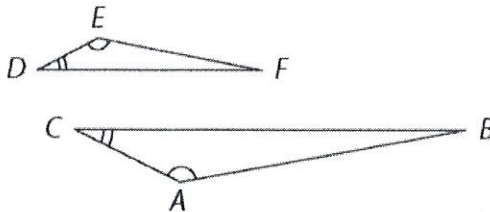
7. What is a rigid motion? Which transformations are rigid motions (result in a congruency transformation)?  
 Everything BUT dilations — translation rotation reflection

8. What is a non-rigid motion? Which transformations is a non-rigid motion?  
 Size is not preserved → dilations

9. Identify the similar triangles.

$\triangle ACB \sim \triangle EDF$

\*answers will vary

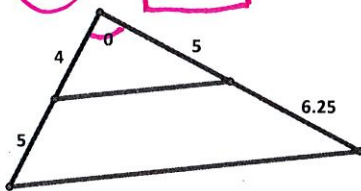


10. Which theorems are used to prove that two triangles are similar?

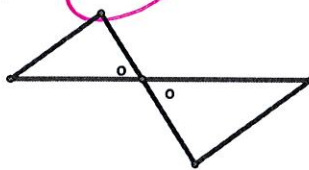
SSS ~  
 SAS ~  
 AA ~

11. Are the following pairs of triangles similar? If they are, then name their similarity criteria. (SSS~, SAS~, AA~)

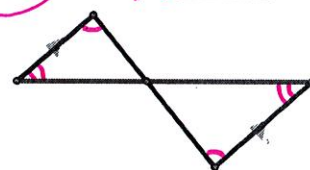
a) Yes / No SAS~



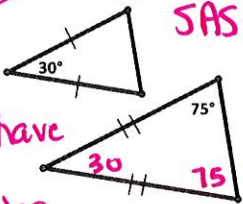
b) Yes / No



c) Yes / No AA~

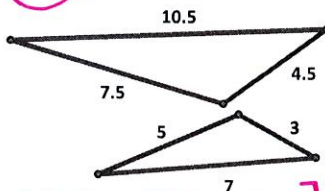


d) Yes / No AA~ or SAS~



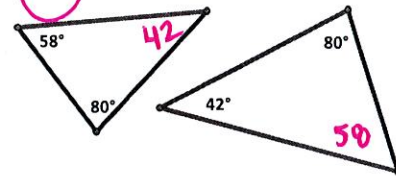
Isosceles triangles have congruent base angles

e) Yes / No SSS~



$\frac{10.5}{7} = \frac{4.5}{3} = \frac{7.5}{5} \text{ all } = 1.5$

f) Yes / No AA~



12. Find x and the length of the missing sides in the diagram below.

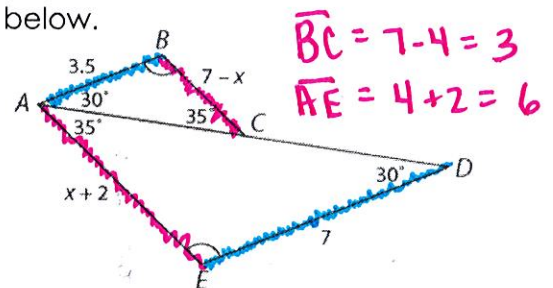
~~$\frac{3.5}{7-x} = \frac{7}{x+2}$~~

$3.5(x+2) = 7(7-x)$

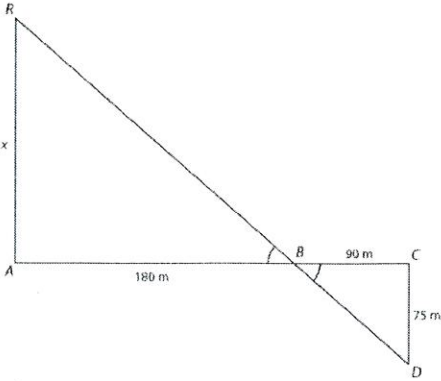
$3.5x + 7 = 49 - 7x$

$10.5x + 7 = 49$

$10.5x = 42 \quad \boxed{x=4}$



13. Finding the distance across a canyon can often be difficult. A drawing of similar triangles can be used to make this task easier. Use the diagram to determine  $\overline{AR}$ , the distance across the canyon.



$$\frac{x}{75} = \frac{180}{90}$$

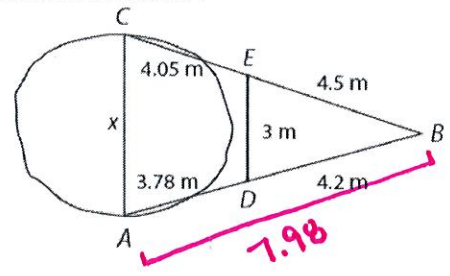
$$x = 150 \text{ m}$$

14. To measure  $\overline{BC}$ , the distance across a crater, an archaeologist stands at point A and locates points B, C, D, and E. What is the distance across the crater?

$$\frac{x}{3} = \frac{7.98}{4.2}$$

$$\frac{4.2x}{4.2} = \frac{23.94}{4.2}$$

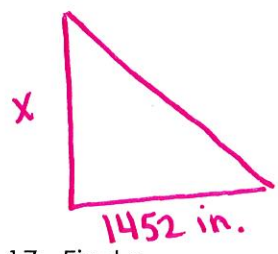
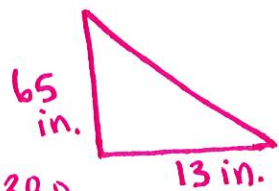
$$x = 5.7 \text{ m}$$



15. Rebecca is 5 feet 5 inches tall and is standing near the Space Needle in Seattle, Washington. She casts a 13 inch shadow at the same time that the Space Needle casts a 121 foot shadow. How tall is the Space Needle?

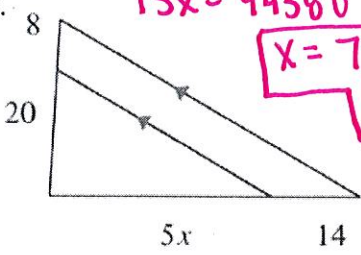
$$5 \text{ ft. } 5 \text{ in.} = 65 \text{ in.}$$

$$\frac{65}{x} = \frac{13}{1452}$$



$$121 \text{ ft} = 1452 \text{ in.}$$

16. Find x.



$$13x = 94380$$

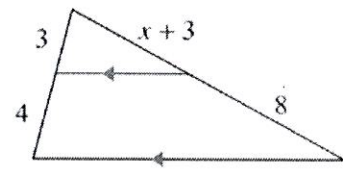
$$x = 7260 \text{ in} = 605 \text{ ft.}$$

$$\frac{8}{20} \times \frac{14}{5x}$$

$$40x = 280$$

$$x = 7$$

17. Find x.



$$\frac{3}{4} = \frac{x+3}{8}$$

$$4x + 12 = 24$$

$$4x = 12$$

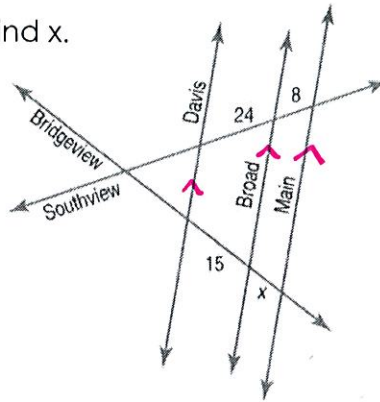
$$x = 3$$

18. Davis, Broad, and Main Streets are parallel. Find x.

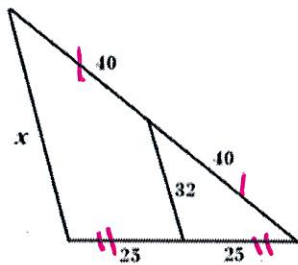
$$\frac{24}{8} = \frac{15}{x}$$

$$24x = 120$$

$$x = 5$$



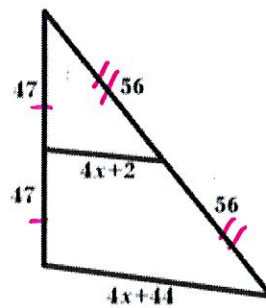
19. Find the value of x.



32 is a midsegment

$$x = 64$$

20. Find the length of the midsegment.



$$2(4x+2) = 47+44$$

$$8x+4 = 91$$

$$8x = 87$$

$$x = 10$$

$$4(10)+2 = 42$$